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West Yorkshire, HX7 7AF, United Kingdom**(51) INT CL⁵**F21V 21/30**

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(56) Documents cited

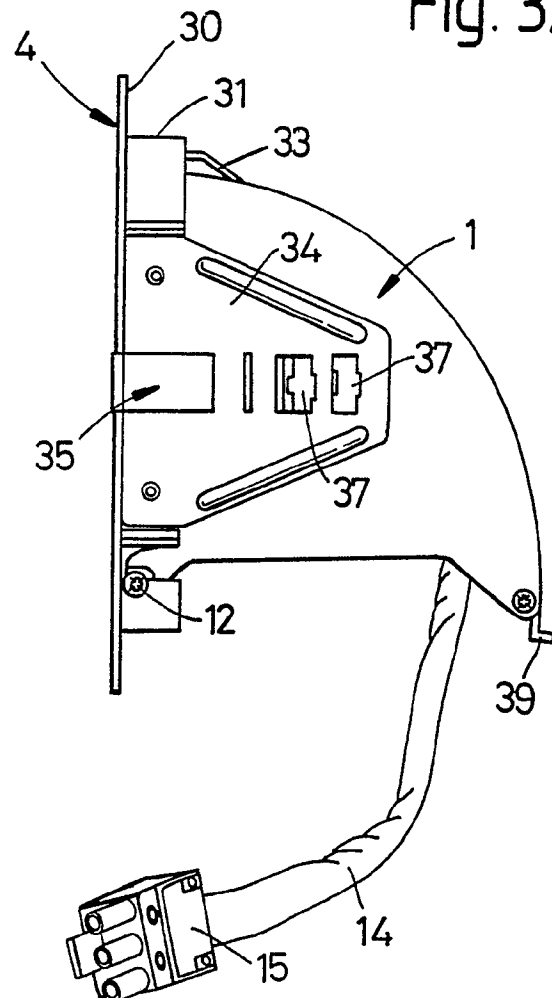
None

(58) Field of search

UK CL (Edition K) F4R RFT RMG**INT CL⁵ F21V 21/30**

(54) A light fitting

(57) A light fitting for recessing in a surface such as a suspended ceiling or wall comprises a lamp housing 1 and a frame 4 for the housing which can be fitted into an aperture in the surface in which the fitting is to be recessed. The housing 1, which is preferably detachably mounted in the frame, can pivot about an axis through the frame 4 so that light from the fitting can be angled as desired. The housing 1 is of at least part-circular cross-section with respect to the axis and is provided with a series of exterior protrusions against which a spring means 33 bears to enable the housing 1 to be rotated to the desired angle with respect to the frame 4 and retained in position.



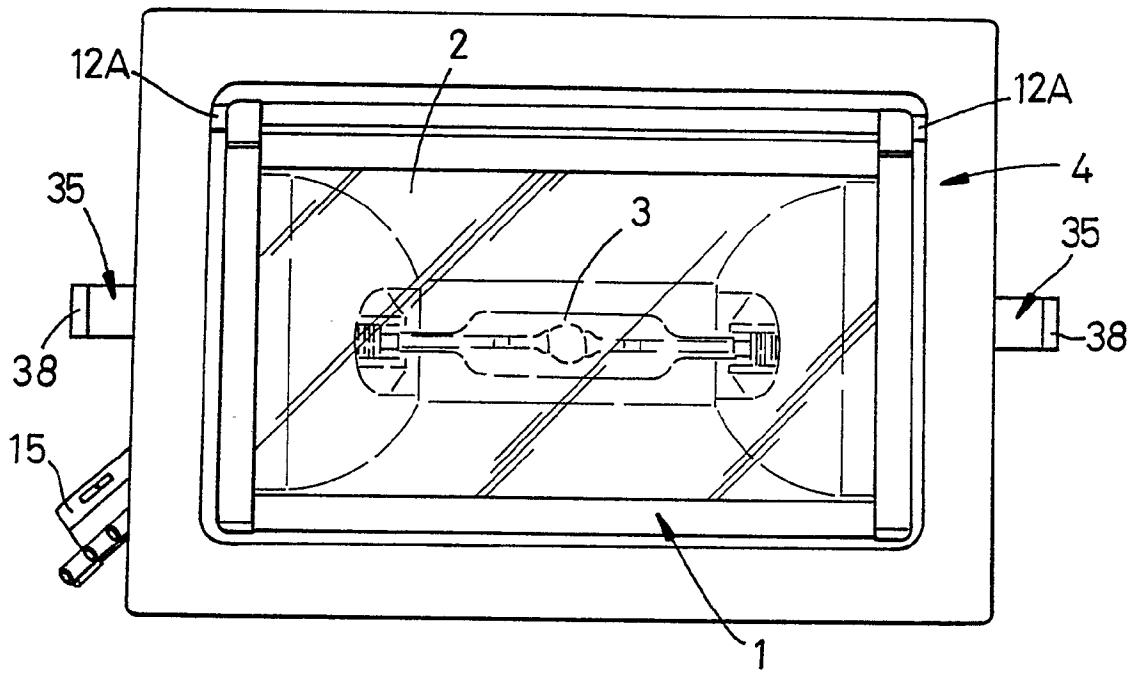


Fig. 1

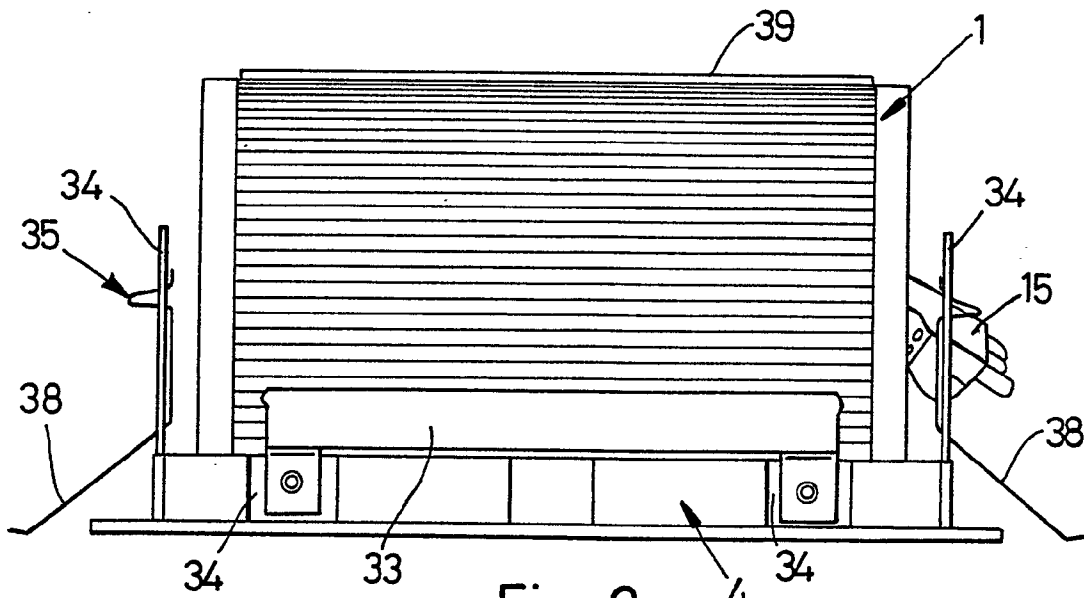


Fig. 2

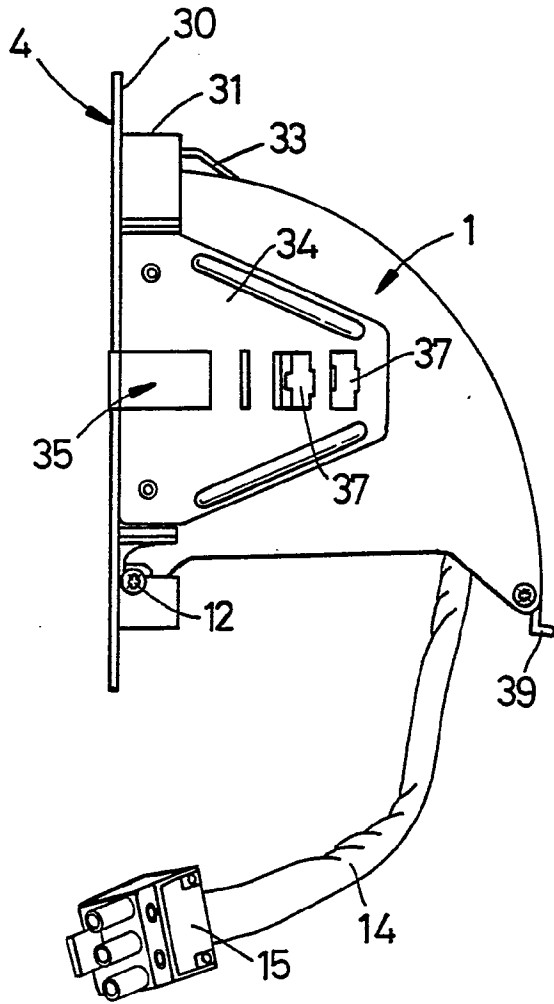


Fig. 3A

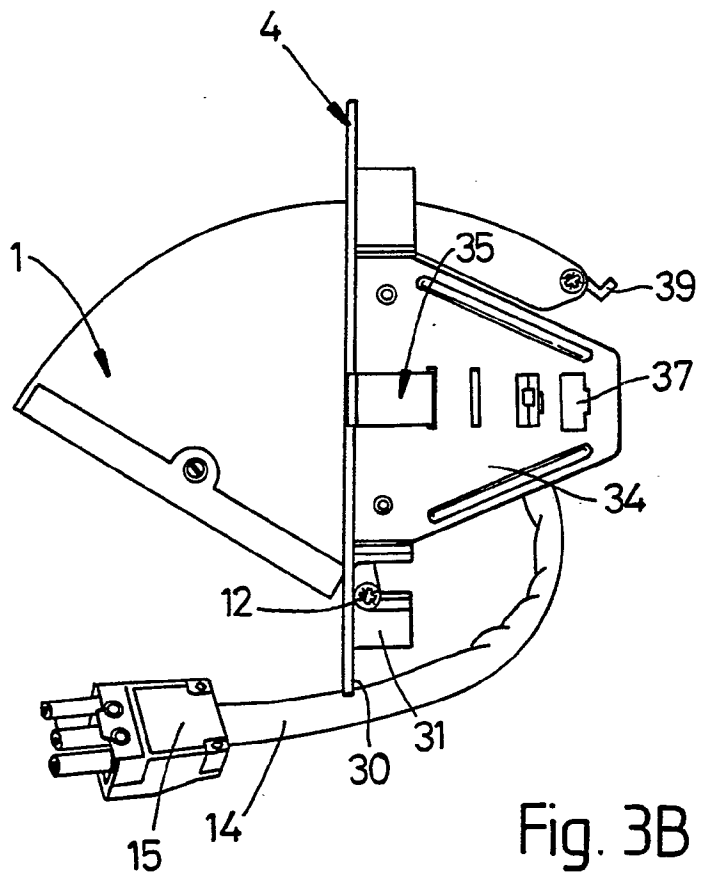


Fig. 3B

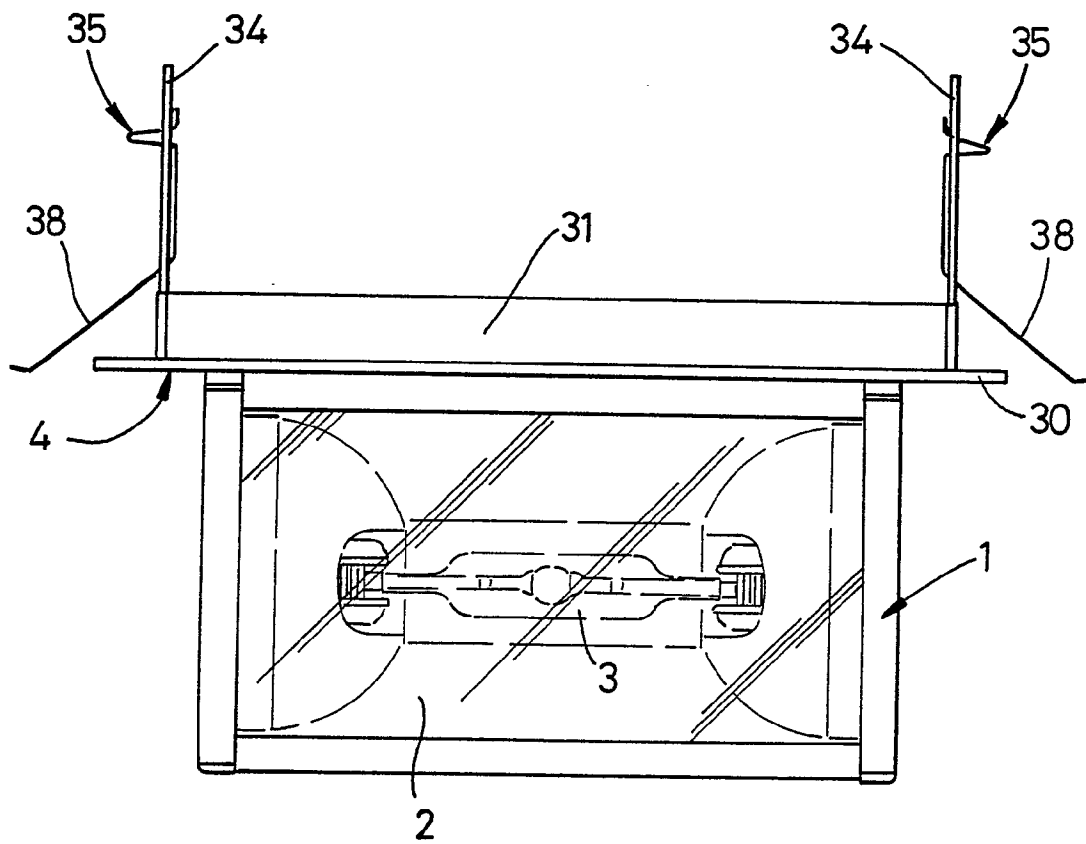


Fig. 4

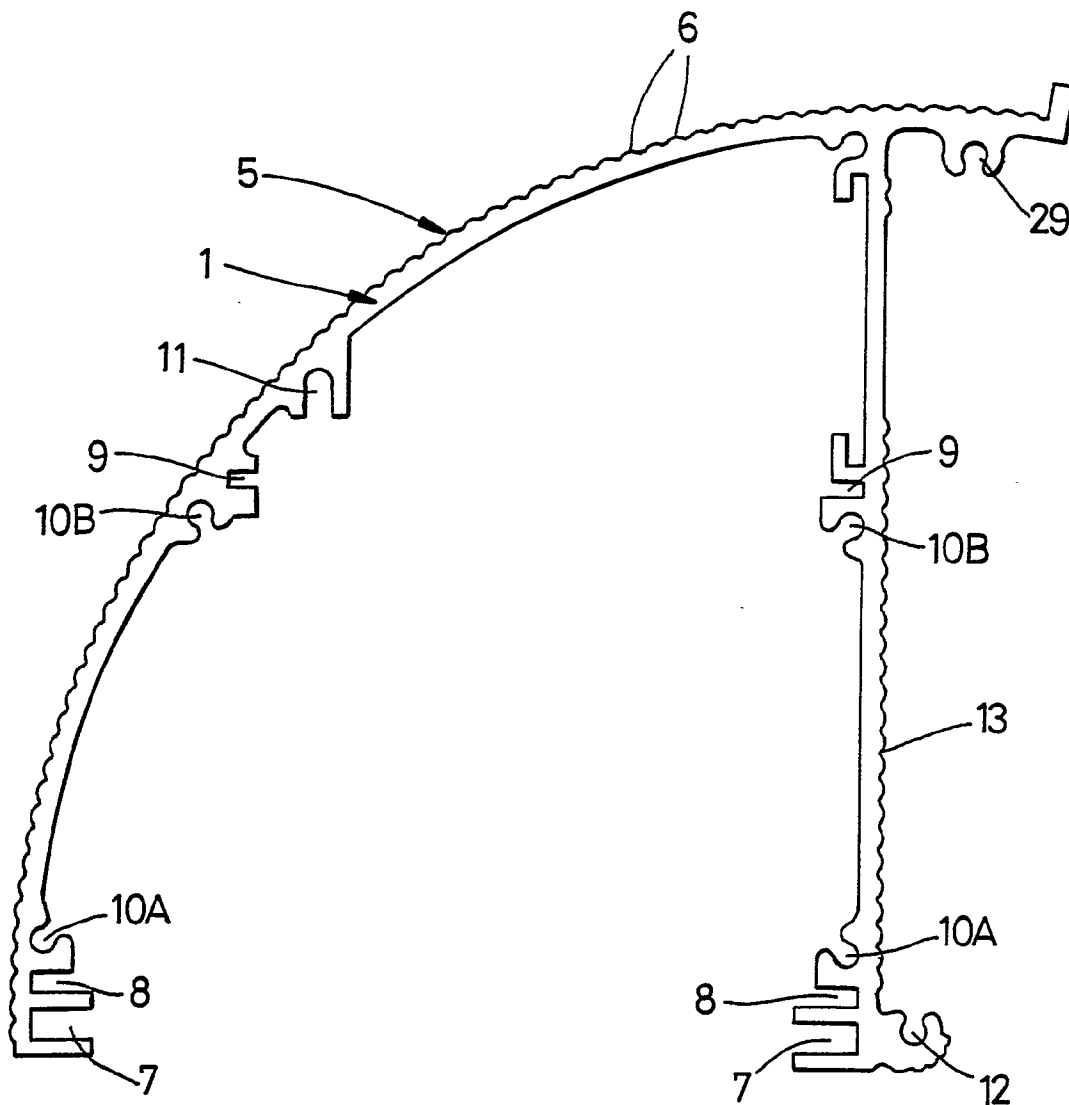
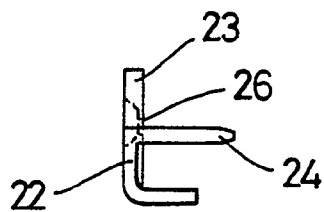
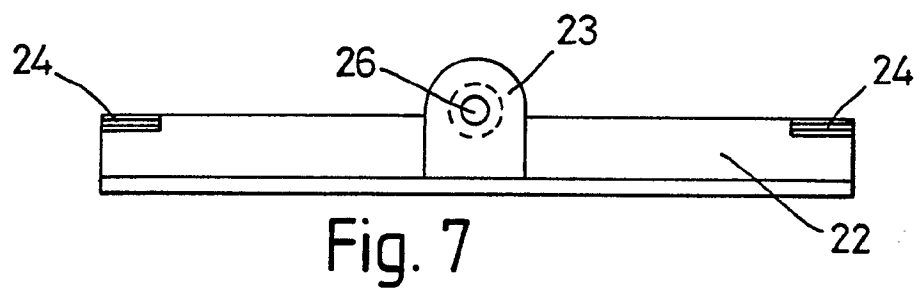
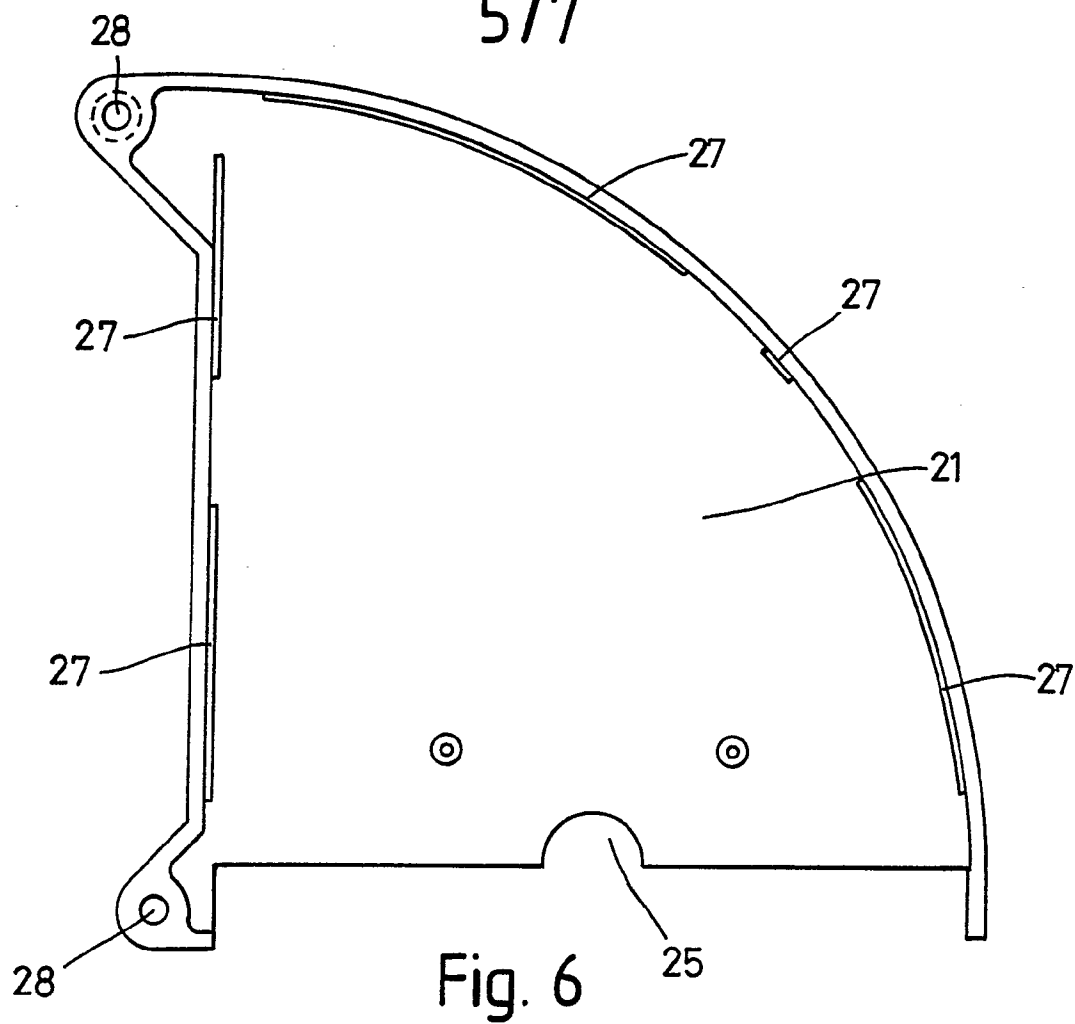


Fig. 5

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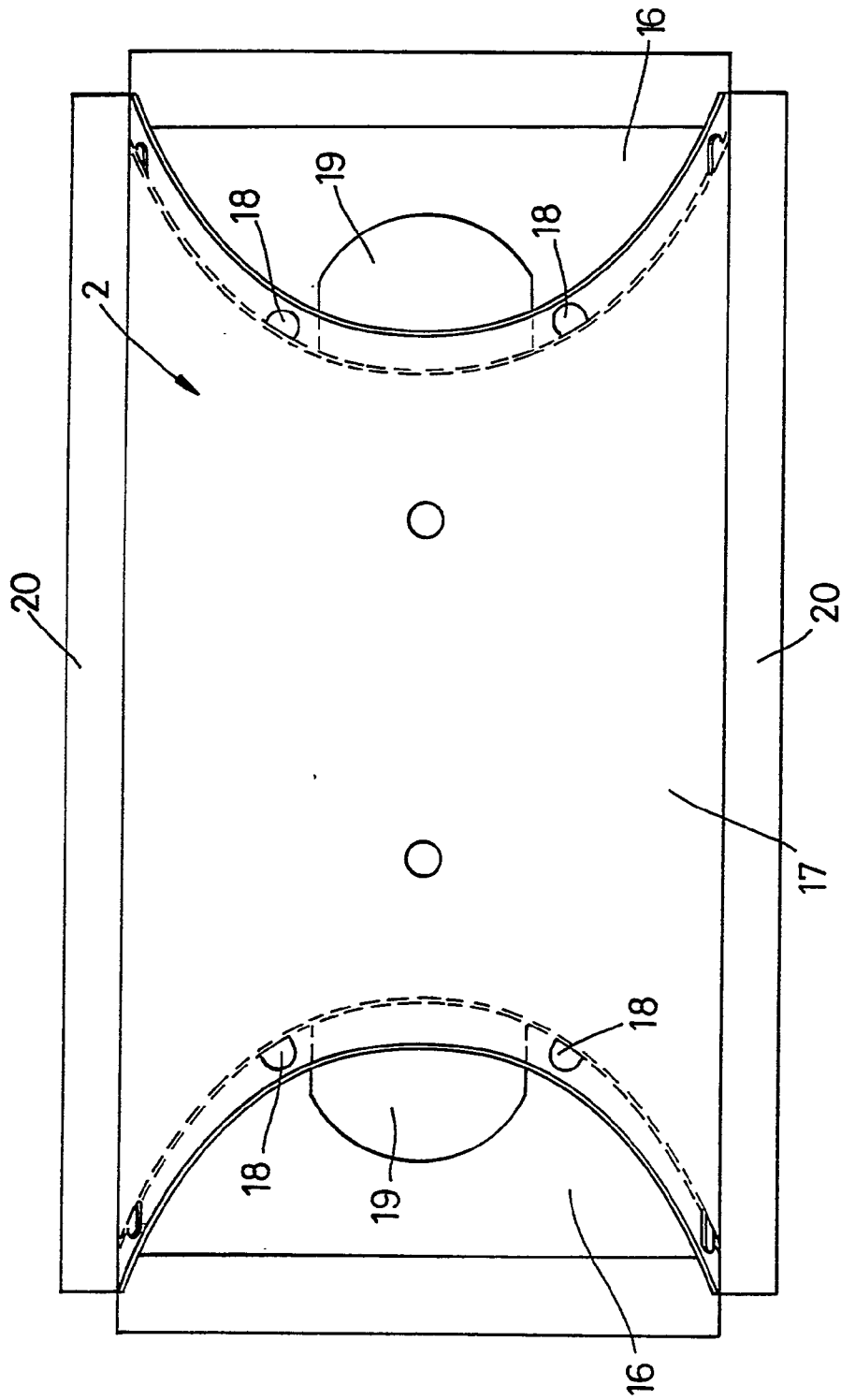


Fig. 9

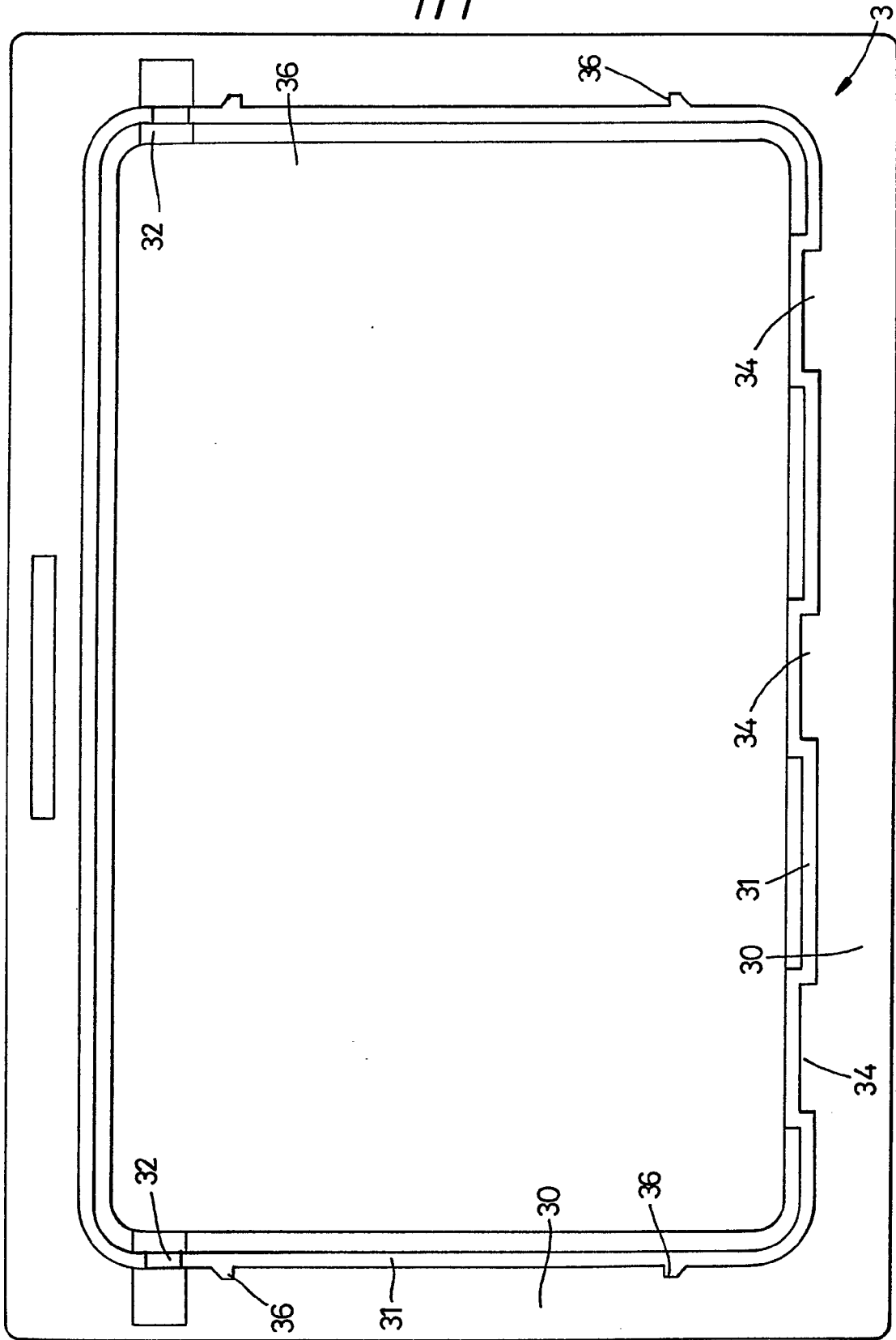


Fig. 10

A LIGHT FITTING

The present invention relates to a light fitting and in particular to a fitting intended to be recessed in a suspended ceiling, a wall, floor or other surface.

Although throughout this specification the invention is referred to as a light fitting, it is to be understood that it could also be used as an illuminated sign or other illuminated system in which rear illumination is required.

According to the present invention there is provided a light fitting for recessing in a surface comprising a lamp housing and a frame for the housing which can be fitted into an aperture in the surface in which the fitting is to be recessed, and characterised in that the housing can pivot through the frame about an axis which is fixed with respect to the frame so that light from the fitting can be angled as desired, the housing being of at least part-circular cross-section with respect to the axis and being provided with a series of exterior protrusions against which a spring means bears to enable the housing to be rotated to the desired angle and retained in position.

Preferably, the protrusions comprise a series of ridges or ribs against which the spring means bears to retain the housing in position.

Preferably also, the spring means is attached to the frame.

Preferably also, wherein the lamp housing is detachably mounted to the frame.

Preferably also, the lamp housing is provided with a bearing which can be located into a slot or aperture defined by the frame to detachably mount the housing to the frame and provide the means whereby the housing can pivot with respect to the frame.

Preferably also, the frame can be retained in position in the aperture by at least one spring clip.

Preferably also, the housing and the frame are made from components which can be cut to a predetermined length and assembled so that the light fitting can be made any desired length.

The present invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is an underneath view of a light fitting according to the present invention for fitment into a ceiling;

Figure 2 a side view of the fitting shown in Figure 1;

Figures 3A and 3B are end views of the same fitting showing a lamp housing thereof when flush with a frame of the fitting and when projecting partially therefrom respectively;

Figure 4 is a side view when the lamp housing is projecting fully from the frame;

Figure 5 is a transverse cross-section through the housing;

Figure 6 is a side view of the interior of an end cap for the housing;

Figures 7 and 8 are side and end views respectively of a glass retaining piece for use with the housing;

Figure 9 is a rear view of a reflector for location in the housing; and

Figure 10 is a rear view of the frame for the housing.

The light fitting of the invention comprises a lamp housing 1 in which is located a reflector 2, a lamp 3 and electrical components (not shown) for the control and management of the lamp 3, and a frame 4. The frame 4 is intended to be fitted into an appropriately sized aperture in a ceiling, wall, floor or other surface where it is desired to mount the light fitting. The housing 1 is fastened to the frame 4 but can be rotated partially through it, as will be described and as shown in Figures 3B and 4, so that the housing 1 can be angled to shed light in a particular direction.

The housing 1 preferably comprises an aluminium extrusion which has a cross-section substantially in the shape of a quadrant, as shown in Figure 5. The part circular exterior surface 5 of the housing 1 is corrugated with a series of longitudinal ribs or ridges 6. The interior of the housing 1 is provided with several pairs of opposing channels 7,8,9 and grooves 10A,10B,11 into which various components can be slotted.

The part-circular exterior surface 5 of the housing covers at least 90° and is radiussed with respect to an exterior groove 12 formed at the edge of the flat side 13

of the housing 1. This groove 12 is a pivot point for the housing 1 with respect to the frame 4. The exterior of the flat side 13 may also be corrugated, as shown in Figure 5, but this is for uniformity and decorative effect only. An aperture (not shown) is formed centrally of the flat side 13 through which electrical connection can be made to the lamp 3 via a cable 14 and connector 15.

The reflector 2 which is located in the housing 1 is made in a conventional manner, as shown in Figure 9, from a reflective sheet material. This sheet is cut to form two substantially semi-circular side pieces 16 and a third piece 17 which is flexed and secured to the side pieces 16 by means of tags 18 to form a dished reflecting surface. Holes 19 are provided in the side pieces 16 into at least one of which is located a socket for the lamp 3.

The reflector 2 is located in the housing by means of flanges 20 formed along the edges of the centre piece 17, which flanges 20 locate into opposed channels 8 provided in the housing 1. The other channels 7,9 and the grooves 10A,10B,11 of the housing 1 are provided for other fixtures. A gear tray (not shown) for holding electrical control equipment for the lamp 3 is located in the channels 9, and the pairs of grooves 10A and 10B are used to locate and secure caps 21. The U-shaped groove 11 is an earthing point for the lamp 3 and in the front pair of channels 7 can be located a safety glass front, which may also comprise a sign for illumination, or a diffuser as appropriate for the use to which the light fitting is to be put.

A pair of glass retaining pieces 22, as shown in Figures 7 and 8, are used to retain the glass front in position in the housing 1. Each piece 22 comprises an angled section with a central projecting radiussed lug 23

and two extending prongs 24, one at each end of the section. After the glass front has been slid into the channels 7 of the housing 1, the two end pieces 22 are fitted, one at each side. The prongs 24 locate into the slots 8 of the housing 1 and the central lug 23 of each piece 22 fits into a semi-circular cut-away portion 25 formed in the adjacent cap 21. A central hole 26 in each of the lugs 23 accepts a tool removable stud fastener (not shown) which attaches the piece 22 to one of two projecting portions of the gear tray within the housing 1.

In this way, the glass front can be easily removed from the light fitting by simply unfastening and removing the glass retaining pieces 22 without having to dismantle any more of the fitting. This provides access for relamping but the fact that the studs used to fasten the glass retaining pieces 22 are tool removable is a deterrent to tampering.

In use, the housing 1 is cut to an appropriate length for the required light, the light fitment and glass front are located therein and the ends of the housing 1 are closed by means of the caps 21 and glass retaining pieces 22. The caps 21 are of injection moulded plastic and conform in shape with the cross-sectional quadrant shape of the housing 1 so that they can be pushed on. Thin diaphragms 27 of plastic are located around the inner edge of the caps 21 to locate between the projections around the inner periphery of the housing 1 to provide location and to prevent light spillage therefrom. The caps 21 are also secured to the housing by tool removable fasteners which locate through the holes 28 in the caps 21 and into grooves 12 and 29 formed in the housing 1. This again helps to prevent tampering with the light fitting.

The assembled lamp housing 1 is slotted into the frame 4 at the pivot point 12 via externally attached bearings 12A (Figure 1) comprising, for example, nylon bushes, so that it can pivot through the aperture defined by the frame itself. Preferably, the frame 4, as shown in Figure 10 is made in one piece although it can be made from four pieces of aluminium extrusion which are cut and mitred to appropriate lengths. In this way the light fitting can be made any length, as desired. The frame 4 has a substantially right-angled cross-section, one side 30 of which is intended to abut the front of the ceiling, wall or other surface into which the light fitting is to be recessed and the other side 31 of which is intended to project into the aperture, covering the edge thereof. On opposed sides of the frame 4 are two keyholes or apertures 32 through which the pivots for the housing 1 locate so that the housing 1 can pivot through the aperture defined by the frame 4. So that the housing can be angled with respect to the frame 4 and retained in a desired position, a spring means 33 is attached to the frame 4 in grooves 34 to bear against the corrugated exterior surface 5 of the housing 1, as shown in Figure 2.

The spring means 33 comprises a leaf of metal which bears against the corrugated surface 5 of the housing 1 so that it can ride over the ridges 6 and locate in the furrows therebetween to retain the housing 1 frictionally in a pre-set position with respect to the frame 4. In this way, the housing 1 can be pivotally pushed or pulled into or out of the frame 4 and retained in virtually any position over 90° to angle the light. Although only one elongate leaf spring 33 is shown in Figure 2, it will be appreciated that two or more smaller springs could be used instead and attached to the frame in the grooves 34.

The frame 4 is itself retained in position in the intended aperture by a pair of fixing plates 34 and spring clips 35. The plates 34 are each rivetted respectively to the opposed shorter sides of the frame 4 between locating projections 36 formed on the sides 31 which will project into the aperture. Notches 37 are stamped out of the plates 34 for the location of the spring clips 35 therein. Legs 38 forming part of the clips 35 project outwardly of the plates 34 so that in use the legs 38 can bear against the rear of the ceiling, wall or other surface into which the light fitting is fitted in opposition to the side 30 of the frame 4 which bears against the front surface.

The light fitting is installed by firstly fitting the frame 4, with the plates 34 attached thereto but minus the spring clips 35, into position in an appropriately sized aperture. The spring clips 35 are then located into the notches 37 so that the frame 4 is firmly held in position. The assembled lamp housing 1 can then be electrically connected to appropriate wiring and angled through the frame 4 and slotted into position with the pivot bearings which locate into the keyholes 32. The lamp housing 1 can then be angled with respect to the frame 4 to direct light as required. A stop 39 can be attached to the housing 1 to prevent it from being pulled out from the frame 4 at an angle greater than 90° with respect thereto.

Thus, the invention provides an angle light suitable for use where a flush fitting is required and which can easily be made any length as required. The frame 4, the housing 1 and the reflector 2 are all designed so that they can be cut to length to suit the environment and use for which the light fitting is required. This is an advantage over similar lights available in the prior art.

However, the main advantage of the light fitting of the present invention over conventional fittings is that the lamp housing 1 with its interior fitments can be pre-assembled and slotted into the frame 4 via the keyholes 32 after construction of the structure supporting the frame 4. This also means that the housing 1 can be easily removed from the frame 4 for maintenance and servicing. This is accomplished by pushing the housing 1 into the frame past the point at which it is flush therewith and then twisting it to disengage the pivot bearings from the keyholes 32. It can then be angled through the frame 4. Hence, the frame 4 can be left in position in the suspended ceiling, wall, floor or other surface without disturbance. In contrast, conventional light fittings are difficult to demount when once positioned as their removal usually necessitates at least partial dismantling of the structures in which they are mounted. This is both inconvenient and time consuming.

CLAIMS

1. A light fitting for recessing in a surface comprising a lamp housing and a frame for the housing which can be fitted into an aperture in the surface in which the fitting is to be recessed, and characterised in that the housing can pivot through the frame about an axis which is fixed with respect to the frame so that light from the fitting can be angled as desired, the housing being of at least part-circular cross-section with respect to the axis and being provided with a series of exterior protrusions against which a spring means bears to enable the housing to be rotated to the desired angle and retained in position.
2. A light fitting as claimed in Claim 1, wherein the protrusions comprise a series of ridges or ribs against which the spring means bears to retain the housing in position.
3. A light fitting as claimed in Claim 2, wherein the exterior surface of the part-circular section of the housing is corrugated and the spring means can ride over the ridges thereof and locate in the furrows therebetween as the housing is pivoted through the frame.
4. A light fitting as claimed in any one of Claims 1 to 3, wherein the spring means is attached to the frame.
5. A light fitting as claimed in any one of Claims 1 to 4, wherein the spring means comprises at least one leaf spring.
6. A light fitting as claimed in any one of Claims 1 to 5, wherein the lamp housing is detachably mounted to the frame.

7. A light fitting as claimed in Claim 6, wherein the lamp housing is provided with a bearing which can be located into a slot or aperture defined by the frame to detachably mount the housing to the frame and provide the means whereby the housing can pivot with respect to the frame.
8. A light fitting as claimed in any one of Claims 1 to 7, wherein the housing can be rotated through up to 90° through the frame.
9. A light fitting as claimed in any one of Claims 1 to 8, wherein the frame can be retained in position in the aperture by at least one spring clip.
10. A light fitting as claimed in Claim 9, wherein the spring clip can be detachably secured to the frame whereby the frame can be retained in position in the aperture.
11. A light fitting as claimed in any one of Claims 1 to 10, wherein the housing and the frame are made from components which can be cut to a predetermined length and assembled so that the light fitting can be made any desired length.
12. A light fitting substantially as described herein with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

GB 9215992.0

Relevant Technical fields

(i) UK Cl (Edition ^K) F4R (RMG; RFT)

(ii) Int Cl (Edition ⁵) F21V 21/30

Search Examiner

M JACOBS

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

9 SEPTEMBER 1992

Documents considered relevant following a search in respect of claims 1 TO 12

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevance to claim(s)

Categories of documents

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